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Report on the individual review of the annual submission of Romania submitted in 2015*

Note by the expert review team

Summary

Each Party included in Annex I to the Convention must submit an annual greenhouse gas (GHG) inventory covering emissions and removals of GHG emissions for all years from the base year (or period) to two years before the inventory due date (decision 24/CP.19). Parties included in Annex I to the Convention that are Parties to the Kyoto Protocol are also required to report supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol, with the inventory submission due under the Convention. This report presents the results of the individual inventory review of the 2015 annual submission of Romania, conducted by an expert review team in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol". The review took place from 12 to 17 September 2016 in Bonn, Germany.

* In the symbol for this document, 2015 refers to the year in which the inventory was submitted, not to the year of publication.

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I. Introduction[1]

1. This report covers the review of the 2015 annual submission of Romania organized by the UNFCCC secretariat, in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1, as revised by decision 4/CMP.11) (hereinafter referred to as the Article 8 review guidelines). As indicated in the Article 8 review guidelines, this review process also encompasses the review under the Convention, as described in the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" (hereinafter referred to as the UNFCCC review guidelines) and particularly part III, "UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention". The review took place from 12 to 17 September 2016 in Bonn, Germany, and was coordinated by Mr. Matthew Dudley (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT) that conducted the review of Romania.

Table 1
Composition of the expert review team that conducted the review of Romania

Area of expertise	*Name*	*Party*
Generalist	Mr. Justin Goodwin	United Kingdom of Great Britain and Northern Ireland
	Ms. Melanie Hobson	United Kingdom
Energy	Ms. Rianne Drõge	Netherlands
	Mr. Naofumi Kosaka	Japan
	Ms. Tian Wang	China
	Mr. Benon Bibbu Yassin	Malawi
IPPU	Mr. Joseph Amankwa Baffoe	Ghana
	Mr. Vladimir Danielik	Slovakia
	Ms. Qing Tong	China
Agriculture	Mr. Jacques B. Kouazounde	Benin
	Mr. Chang Liang	Canada
LULUCF	Mr. Kevin Black	Ireland
	Mr. Markus Didion	Switzerland
	Mr. Agustín José Inthamoussu	Uruguay
	Mr. Dinh Hung Nguyen	Viet Nam

[1] At the time of publication of this report, Romania had submitted its instrument of ratification of the Doha Amendment; however, the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

Area of expertise	*Name*	*Party*
Waste	Mr. Philip Acquah	Ghana
	Ms. Irina Yesserkepova	Kazakhstan
Lead reviewers	Mr. Philip Acquah	
	Mr. Justin Goodwin	

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry.

2. This report contains findings based on the assessment by the ERT of the 2015 annual submission against the Article 8 review guidelines. The ERT has made recommendations to resolve those findings related to issues,[2] including issues related to problems.[3] Other findings, and, if applicable, the ERT's encouragements to resolve them, are also included.

3. A draft version of this report was communicated to the Government of Romania, which provided no comments.

4. Annex I shows annual greenhouse gas emissions for Romania, including totals excluding and including the land use, land-use change and forestry sector, indirect carbon dioxide emissions and emissions by gas and by sector. Annex I also contains background data related to emissions and removals from activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and addi.ional activities under Article 3, paragraph 4, of the Kyoto Protocol, if elected, by gas, sector and activity for Romania.

5. Information to be included in the compilation and accounting database can be found in annex II.

6. The ERT notes that Romania's 2015 annual submission was delayed, consistent with decision 6/CMP.9, paragraph 4. As a result, the review of the 2015 annual submission is being held in conjunction with the review of the 2016 annual submission, in accordance with decision 10/CMP.11, paragraph 1. To the extent that identical information is presented in both annual submissions, the ERT has reviewed this information only once, and, as appropriate, has replicated the findings below in both the 2015 and the 2016 annual review reports.

II. Summary and general assessment of the 2015 annual submission

7. Table 2 provides the ERT assessment of the annual submission with respect to the tasks undertaken during the review. Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5 below.

[2] Issues are defined in decision 13/CP.20, annex, paragraph 81.

[3] Problems are defined in decision 22/CMP.1, annex, paragraphs 68 and 69, as revised by decision 4/CMP.11.

Table 2
Summary of review results and general assessment of the inventory of Romania

Assessment				*Issue or problem ID(s) in tables 3 and or 5[a]*
Dates of submission	Original submission: 15 June 2016 (NIR), 15 June 2016, Version 2 (CRF tables), 15 April 2015 (SEF tables)			
	Revised submissions: 5 August 2016 (NIR), 5 August 2016, Version 3 (CRF tables), 5 August 2016 (SEF tables), 28 October 2016, version 4 (CRF tables)[b]			
	The values from the latest submission are used in this report			
Review format	Centralized			
Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and Wetlands Supplement (if applicable)	Have any issues been identified in the following areas:			
	1.	Identification of key categories	Yes	L.13
	2.	Selection and use of methodologies and assumptions	Yes	I.9, A.6, A.7, L.5
	3.	Development and selection of emission factors	Yes	E.4, E.16, W.1
	4.	Collection and selection of activity data	No	
	5.	Reporting of recalculations	No	
	6	Reporting of a consistent time series	Yes	E.7, E.17, E.18, E.21
	7.	Reporting of uncertainties, including methodologies	No	
	8.	QA/QC	QA/QC procedures were assessed in the context of the national system (see below)	
	9.	Missing categories/completenessc	Yes	G.1, E.25, I.6, I.14, A.15, A.18, L.4, L.9, KL.6
	10.	Application of corrections to the inventory	No	
Significance threshold	For categories reported as insignificant, has the Party provided sufficient information showing that the likely level of emissions meets the criteria in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines?		The Party did not report "NE" for any insignificant categories	
Description of trends	Did the ERT conclude that the description in the NIR of the trends for the different gases and sectors is reasonable?		Yes	
Supplementary information under the Kyoto Protocol	Have any issues been identified in the following areas:			
	1.	National system:		
		(a) The overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements	No	

Assessment			*Issue or problem ID [a](s) in tables 3 and or 5[a]*
	(b) Performance of the national system functions	No	
	2. National registry:		
	(a) Overall functioning of the national registry	No	
	(b) Performance of the functions of the national registry and the technical standards for data exchange	No	
	3. ERUs, CERs, AAUs and RMUs and on information on discrepancies reported in accordance with decision 15/CMP.1, annex, chapter I.E, taking into consideration any findings or recommendations contained in the SIAR	No	
	4. Matters related to Article 3, paragraph 14, of the Kyoto Protocol, specifically problems related to the transparency, completeness or timeliness of reporting on the Party's activities related to the priority actions listed in decision 15/CMP.1, annex, paragraph 24, including any changes since the previous annual submission	No	
	5. LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol:		
	(a) Reporting in accordance with the requirements of decision 2/CMP.8, annex II, paragraphs 1–5	Yes	KL.8
	(b) The Party has demonstrated methodological consistency between the reference level and reporting on forest management in accordance with decision 2/CMP.7, annex, paragraph 14	No	
	(c) The Party has reported information in accordance with decision 6/CMP.9	No	
	(d) Country-specific information has been reported to support provisions for natural disturbances, in accordance with decision 2/CMP.7, annex, paragraphs 33 and 34	Yes	KL.1, KL.2
	(e) Other issues	No	
CPR	Was the CPR reported in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision 1/CMP.8, paragraph 18?	Yes	
Adjustments	Has the ERT applied an adjustment under Article 5, paragraph 2, of the Kyoto Protocol?	No	
	The ERT accepts that the revised estimates submitted by Romania in its 2014 submission can replace previously applied adjustments in the compilation and accounting database	NA	

Assessment			*Issue or problem ID #(s) in tables 3 and or 5[a]*
Response from the Party during the review	Has the Party provided the ERT with responses to the questions raised, including the data and information necessary for the assessment of conformity with the UNFCCC Annex I inventory reporting guidelines and any further guidance adopted by the Conference of the Parties?	Yes	
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No	
Question of implementation	Did the ERT list a question of implementation?	No	

Abbreviations: AAU = assigned amount unit, CER = certified emission reduction unit, CPR = commitment period reserve, CRF = common reporting format, ERT = expert review team, ERU = emission reduction unit, LULUCF = land use, land-use change and forestry, NA = not applicable, NE = not estimated, NIR = national inventory report, QA/QC = quality assurance/quality control, RMU = removal unit, SEF = standard electronic format, SIAR = standard independent assessment report, UNFCCC Annex I inventory reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories", Wetlands Supplement = *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*.

[a] The ERT identified additional issues in the energy, industrial processes and product use, agriculture, LULUCF and waste sectors and for LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol that are not specifically listed in table 2 but are included in table 3 and/or 5.

[b] The 28 October 2016 resubmission was a resubmission of the 2016 and the 2015 inventory.

[c] Missing categories, for which methods are provided in the Intergovernmental Panel on Climate Change (IPCC) *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, may affect completeness and are listed in annex III to this document.

III. Status of implementation of issues and/or problems raised in the previous review report

8. Table 3 compiles all the recommendations made in the previous review report, published on 2 March 2015. For each issue and/or problem, the ERT specified whether it believes the issue and/or problem has been resolved by the conclusion of the review of the 2015 annual submission and provided the rationale for its determination, taking into consideration the publication date of the previous review report and national circumstances.

Table 3
Status of implementation of issues and/or problems raised in the previous review report of Romania

ID#	*Issue and or problem classification[a, b]*	*Recommendation made in previous review report[c]*	*ERT assessment and rationale*
General			
G.1	Completeness (table 3, 2014) Completeness*	Estimate and report emissions from all mandatory categories	Addressing. Romania has provided estimates for most mandatory categories (see ID#s A.16 and A.19 in table 5)

ID#	Issue and/or problem classification[a, b]	Recommendation made in previous review report[c]	ERT assessment and rationale
G.2	Transparency (table 3, 2014) Transparency*	Improve the transparency and readability of the NIR by removing unnecessary repetition and outdated/redundant information	Addressing. Improvements have been made to the NIR; however, the ERT identified new instances to improve transparency (see ID# G.4 in table 5)
G.3	QA/QC and verification (15, 2014). Transparency	Distinguish more carefully in the NIR between case studies related to improvements in reporting, QC checks and QA procedures	Resolved. This aspect has been improved in the NIR and there is now a clear distinction between these activities
Energy			
E.1	1. General (energy sector) (22, 2014) (23, 2013) Adherence to UNFCCC Annex I inventory reporting guidelines*	Endeavour to facilitate effective access to, and the sharing of, relevant energy data between all relevant actors involved in data collection and processing	Addressing. During the review, Romania explained that it had initiated a cooperation protocol between the Ministry of Environment, Waters and Forests and the National Institute for Statistics and will report on these new arrangements in the NIR
E.2	Fuel combustion – reference approach – solid fuels – CO_2 (32, 2014) (34, 2013) Transparency*	Provide, in the NIR, proof of the accuracy of the country-specific CO_2 EF for lignite, and an explanation for the reasons for the differences between the country-specific CO_2 EF for lignite, the IPCC default value and the values used by other reporting Parties	Addressing. During the review, Romania explained that it would submit the country-specific CO_2 EFs for lignite to the IPCC EF database
E.3	Fuel combustion – reference approach – solid fuels – CO_2 (32, 2014) Transparency*	Explain the significant decrease in the CO_2 EF for lignite between 2007 and 2012	Addressing. During the review, Romania explained that it would undertake further analysis of this matter and report thereon in its next submission
E.4	Fuel combustion reference approach – solid fuels – CO_2 (33, 2014) Accuracy*	Initiate a regular annual study to review the accuracy of the data from the EU ETS and its applicability to inventory purposes, and make any necessary changes to the process of determination of country-specific EFs and NCVs	Addressing. During the review, Romania explained that it would update the CO_2 EFs and the NCVs for 2013 and 2014 and report thereon in its next submission
E.5	International bunkers and multilateral operations (26, 2014) (29, 2013) (57, 2012)	Harmonize the values reported in CRF tables 1.C and 1.A(b) for jet kerosene	Not resolved. The values for jet kerosene reported in CRF table 1.D (formerly CRF table 1.C) for 1989, 2013 and 2014 are still inconsistent

ID[a]	Issue and or problem classification[a, b]	Recommendation made in previous review report[c]	ERT assessment and rationale
	Transparency*		
E.6	1.A Fuel combustion – sectoral approach – liquid and solid fuels – CO_2 (29, 2014) Transparency*	Provide information on the applicability of the EU ETS EF data for the years 1989–2006 and for fuel consumption for installations not covered under the EU ETS for the entire time series	Addressing. During the review, Romania explained that the CO_2 EFs are not technology-dependent and the fuel characteristics do not change over years. This explanation has not been included in NIR
E.7	1.A Fuel combustion – sectoral approach – liquid and solid fuels – CO_2 (29, 2014) Consistency*	Examine whether the use of EU ETS average emissions data for all years, instead of only for the period 2007–2010, would improve the accuracy of the estimates for the period 1989–2006, and report on the outcome in the NIR	Addressing. During the review, Romania explained that the recalculation of EFs is resource-intensive with diminishing returns regarding accuracy
E.8	1.A.1.a Public electricity and heat production – liquid fuels – CO_2 (30, 2014) (35, 2013) Transparency*	Report in the NIR the fuel mix it.formation for the category public electricity and heat production where the IEF varies notably over the years, owing to the variation in the fuel mix	Addressing. During the review, Romania explained that it had initiated a cooperation protocol between the Ministry of Environment, Waters and Forests and the National Institute for Statistics
E.9	1.A.1.c Manufacture of solid fuels and other energy industries – solid fuels – CO_2 (34, 2014) Transparency*	Report in the NIR the fuel mix information for the category manufacture of solid fuels and other energy industries where the IEF varies notably over the years due to a variation in the fuel mix	Addressing. During the review, Romania explained that it would undertake further analysis of this matter and report thereon in its next submission
E.10	1.A.2.b Non-ferrous metals – solid fuels – CO_2 (36, 2014) Transparency	Correct the notation key used in the CRF tables from notation keys "NO" to "IE" for CO_2, CH_4 and N_2O emissions from solid fuels in the subcategory non-ferrous metals, where applicable, and explain in the CRF tables in which category the emissions are included	Resolved. The notation keys have been correctly reported in the CRF tables for the subcategory non-ferrous metals
E.11	1.A.2.b Non-ferrous metals – solid fuels – CO_2 (36, 2014) Transparency	Improve the QA/QC processes to avoid errors in the use of the notation keys	Resolved. Romania has reported the appropriate notation keys in the energy sector CRF tables
E.12	1.A.3.b Road transportation – liquid fuels – CO_2 (37, 2014) (36, 2013) Transparency*	Justify the applicability of the EU ETS CO_2 EF for diesel used in road transportation or estimate the emissions by using data on CO_2 EFs from fuel producers and/or fuel importers and NCVs from either fuel producers and/or importers, or from the	Addressing. During the review, Romania explained tl.at the CO_2 EFs are not technology-dependent. This explanation has not been provided in sufficient detail in

ID[a]	*Issue and or problem classification[a, b]*	*Recommendation made in previous review report[c]*	*ERT assessment and rationale*
		energy balance	the NIR
E.13	1.A.4 b Residential – solid fuels – CO_2 (35, 2014) Transparency*	Report in the NIR the fuel mix information for the category residential where the IEF varies notably over the years due to a variation in the fuel mix	Addressing. During the review, Romania explained that it would undertake further analysis of this matter and report thereon in its next submission
IPPU			
I.1	2. General (IPPU) (40, 2014) (43, 2013) Transparency	Improve the readability of the NIR by reducing the use of methodological descriptions copied from the Revised 1996 IPCC Guidelines or the IPCC good practice guidance	Resolved. Romania has significantly reduced the direct use of methodological descriptions from the IPCC authoritative sources
I.2	2. General (IPPU) – (40, 2014) Transparency*	Remove the outdated information in the NIR	Addressing. Romania has made progress in removing outdated information from the NIR. However, the ERT identified that the NIR continues to include references to the Revised 1996 IPCC Guidelines and the IPCC good practice guidance (e.g. the sections on metal production (category 2.C) and fluorinated gases (category 2.F))
I.3	2.A.1 Cement production – CO_2 (42, 2014)Transparency	Improve the explanation of the method used for the calculation of CO_2 emissions from cement production	Resolved. Romania has improved the explanation of the method used in the NIR
I.4	2.B.2 Nitric acid production – N_2O (43, 2014) Transparency	Incorporate the results of the new study regarding emission data reported by the operators in the annual submission	Resolved. Romania has included the results of the study in the NIR
I.5	2.B.2 Nitric acid production – N_2O (44, 2014) Transparency	Include in the NIR the information on how the destruction of N_2O is taken into account in the estimation of N_2O emissions	Resolved. Romania has included this information in the NIR
I.6	2.F.4 Aerosols – N_2O (47, 2014) Completeness*	Consider the newly available data for estimating emissions from solvent and other product use	Addressing. During the review, Romania explained that it is continuing its efforts to obtain information

ID[a]	Issue and or problem classification[a, b]	Recommendation made in previous review report[c]	ERT assessment and rationale
			regarding N_2O emissions from aerosol cans (see ID# I.14 in table 5)
Agriculture			
A.1	3. General (agriculture) (50, 2014) (49, 2013) (91, 2012) Transparency	Improve the QA/QC procedures as well as collaboration between the Ministry of Environment and Climate Change and the Forest Research and Management Planning Institute to ensure the consistency of the reported information	Resolved. The ERT acknowledges the improvement made (e.g. regarding the reporting of N_2O emissions from histosols)
A.2	3. General (agriculture) (51, 2014) (51, 2013) (87, 2012) Transparency	Provide concise information on the methodology used to collect AD	Resolved. Romania has significantly improved the information provided on AD used in the NIR
A.3	3. General (agriculture) (51, 2014) (51, 2013) (87, 2012) Transparency	Include summarized and concise information in English on the methodology used for the calculation of VS excretion in the NIR	Resolved. Romania has significantly improved the information provided on the methods and other parameters used in the NIR, including for VS excretion
A.4	3.A Enteric fermentation – CH_4 (52, 2014) Transparency	Include in the NIR the explanation for any differences between the data reported in the NIR and FAOSTAT data on animal numbers	Resolved. Romania reported in its NIR that data discrepancies identified between FAOSTAT data and national data are due to the methodologies used by FAOSTAT
A.5	3.A Enteric fermentation – CH_4 (53, 2014) Transparency	Include concise and summarized information on the methodology used to estimate the body masses for the different livestock types in the NIR	Resolved. Romania has included information in its NIR regarding the method used to estimate body masses for various livestock categories, which is derived from a 2011 national study titled "Elaboration of national emission factors/other parameters relevant to NGHGI Sectors Energy, Industrial Process, Agriculture and Waste, to allow for the higher tier calculation methods"
A.6	3.A Enteric fermentation – CH_4	Avoid the use of a constant value for milk production	Not resolved. Romania continues to use constant annual milk production data

ID[a]	*issue and or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	(54, 2014) (54, 2013) Accuracy*		to estimate the CH_4 EFs for dairy cows for enteric fermentation
A.7	3.A Enteric fermentation – CH_4 (54, 2014) (54, 2013) Accuracy*	Estimate milk production per animal per day using the milk production data provided by the National Institute for Statistics and the number of dairy cattle	Not resolved. Romania continues to use constant annual milk production data to estimate the CH_4 EFs for dairy cows for enteric fermentation
A.8	3.B Manure management – N_2O (55, 2014) Transparency*	Include in the NIR information on the data used for the estimation of N excretion	Resolved. Romania has included information in its NIR on the N excretion rate, which is derived from a 2011 national study titled "Elaboration of national emission factors/other parameters relevant to NGHGI Sectors Energy, Industrial Process, Agriculture and Waste, to allow for the higher tier calculation methods"
A.9	3.D.a Direct N_2O emissions from managed soils – N_2O (56, 2014) Transparency	Include in the NIR information on the reason for the decreased crop production in 2012	Resolved. This information has been provided in the NIR
A.10	3.D.a Direct N_2O emissions from managed soils – N_2O (57, 2014) Transparency	Use the notation key "IE" instead of "0" (zero) to report "plants used for silage" and "annual green fodder" for the years for which the data are included in "total annual green fodder" and include the information provided during the review in the NIR	Resolved. The notation key "IE" has been used in the CRF tables and in the NIR
A.11	3.D.a Direct N_2O emissions from managed soils – N_2O (59, 2014) Transparency	Document the methodology used to estimate N_2O emissions from histosols in the NIR	Resolved. Romania has included information in the NIR on the methodology used to estimate N_2O emissions from histosols
LULUCF			
L.1	4. General (LULUCF) (61, 2014) (60, 2013) (110, 2012) Transparency	Improve the transparency of reporting on recalculations	No longer relevant. The 2015 and the 2016 annual submissions were identical

ID[a]	*Issue and or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
L.2	Land representation (62, 2014) (59, 2013) Transparency	Classify land uses following the six IPCC land categories and subcategories, then subdivide every major category/subcategory as appropriate to the national circumstances, and report the respective land-use matrices	Resolved. The land classification approach was implemented and supporting information was provided
L.3	Land representation (63, 2014) Transparency	Revise the land-use matrices reported in the NIR to ensure that they cover the entire area of the country for the entire time series	Resolved. Romania has provided revised land-use matrices that cover the entire area of Romania for the entire time series
L.4	4. General (LULUCF) (64, 2014) Completeness*	Report dead organic matter in wetlands converted to cropland; living biomass and dead organic matter in settlements converted to cropland; dead organic matter in cropland converted to grassland; and all pools in wetlands converted to grassland as notation key "NE" instead of "NO" and explain in CRF table 9(a) the reason for using the notation key "NE"	Not resolved. Romania continues to report those categories using the notation key "NO"
L.5	4.A.1 Forest land remaining forest land – CO_2 (66, 2014) (61, 2013) (119, 2012) Accuracy*	Provide estimates for the dead organic matter and mineral soil pools using the tier 2 methodology	Not resolved. Romania continues using the tier 1 approach for these carbon pools
L.6	4.B.1 Cropland remaining cropland – CO_2 (67, 2014) Transparency	Document in the NIR the method used to estimate the carbon stock changes in organic soils	Resolved. The information was provided in the NIR
L.7	4.B.1 Cropland remaining cropland – CO_2 (67, 2014) Consistency	Ensure that the division of areas into country-specific subcategories is correct	Resolved. This matter was resolved as part of the process of switching to a new method for land representation
L.8	4.B.2 Land converted to cropland – CO_2 (70, 2014) Transparency	Report organic soils for wetlands converted to cropland as notation key "NO" instead of "IE"	Resolved
L.9	4.C.1 Grassland remaining grassland – CO_2 (68, 2014) (65, 2013) (126, 2012) Completeness*	Estimate and report the carbon stock changes from mineral and organic soils	Not resolved. Romania continues to report the emissions using the notation key "NO" without providing justification
L.10	4.C.1 Grassland remaining grassland	Use the notation key "NE" instead of "NO" for pools for which the tier 1 method is used, assuming	Not resolved. See ID# L.9 above

ID[a]	Issue and or problem classification[a, b]	Recommendation made in previous review report	ERT assessment and rationale
	– CO_2 (68, 2014) (65, 2013) (126, 2012) Transparency*	no change in carbon stock	
L.11	4(II) Emissions and removals from drainage and rewetting and other management of organic/mineral soils – N_2O (71, 2014) Accuracy	Continue the ongoing analysis to clarify whether the drained soils are organic or mineral and revise the use of the EFs accordingly, if necessary	Resolved. The NIR includes the outcomes of the analysis of drained soils in cropland, grassland and forest land. These soils are considered organic
Waste			
W.1	5.A Solid waste disposal on land – CH_4 (74, 2014) (69 and 72, 2013) Accuracy*	Make efforts to develop country-specific CH_4 EFs and parameters for the estimation of emissions from this category	Not resolved. Romania has not developed a new DOC value to reflect the changing waste composition in the country, nor has it developed corresponding country-specific EFs
W.2	5.A Solid waste disposal on land – CH_4 (75, 2014) Transparency	Report in the NIR the sources of information used, such as expert judgement, literature, studies and other government documents	Resolved. Romania has included in the NIR (table 7.6) the sources of information used
W.3	5.A Solid waste disposal on land – CH_4 (76, 2014) Transparency	Provide supporting explanations for the trend in the NIR	Resolved. The trend analysis is provided in the NIR (page 684)
W.4	5.C.1 Waste incineration – CO_2 and N_2O (79, 2014) Consistency	Ensure the completeness of the reporting of CO_2 and N_2O emissions from the incineration of hazardous waste for the period 1989–1991	Resolved. Romania has reported a complete time series in CO_2 and N_2O emissions from the incineration of hazardous waste
W.5	5.C.1 Waste incineration – CO_2 and N_2O (79, 2014) Transparency	Consider whether reporting the notation key "NO" for clinical waste for the period 1989–1995 would be more appropriate than the notation key "NE" and revise the notation key, if appropriate	Resolved. Romania has reported the notation key "NO" for CO_2 and N_2O emissions from the incineration of clinical waste for 1989–1995
W.6	5.C.1 Waste incineration – CO_2 and N_2O (80, 2014)	Provide in the NIR information explaining the sharp decrease in CO_2 and N_2O emissions from waste incineration from 2005 to 2007	Resolved. Romania explained that the trend is in line with European regulation, as explained in the NIR (page

ID[a]	Issue and/or problem classification[a, b]	Recommendation made in previous review report[c]	ERT assessment and rationale
	Transparency		719)
W.7	5.D Wastewater treatment and discharge – CH_4 and N_2O (77, 2014) Transparency	Include in the NIR information regarding the data sources for the parameters used in the calculation of CH_4 emissions from wastewater handling	Resolved. Romania has included this information in the NIR (table 7.27)
W.8	5.D Wastewater treatment and discharge – CH_4 and N_2O (78, 2014) Consistency	Review whether the use of different data sources caused a potential inconsistency in the time series of N_2O emissions from human sewage	Resolved. Romania has used country-specific data provided by the National Institute for Statistics
W.9	5.D Wastewater treatment and discharge – CH_4 and N_2O (78, 2014) Consistency	Increase the consistency of the time series for N_2O emissions from human sewage, if applicable	Resolved. Romania has used country-specific data provided by the National Institute for Statistics (see ID# W.8 above)
KP-LULUCF			
		No recommendations related to KP-LULUCF activities were made in the 2014 review report	

Abbreviations: AD = activity data, CRF = common reporting format, DOC = degradable organic carbon, EF = emission factor, ERT = expert review team, EU ETS = European Union Emissions Trading System, IE = included elsewhere, IEF = implied emission factor, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, N = nitrogen, NCV = net calorific value, NE = not estimated, NIR = national inventory report, NO = not occurring, QA/QC = quality assurance/quality control, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, , UNFCCC Annex I inventory reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories", VS = volatile solids.

[a] References in parentheses are to the paragraph(s) and the year(s) of the previous review report(s) where the issue was raised. Issues are further classified as defined in decision 13/CP.20, annex, paragraph 81. In the review of the supplementary information reported in accordance with Article 7, paragraph 1, of the Kyoto Protocol, the ERT has applied the classification in decision 22/CMP.1, annex, paragraph 69, in conjunction with decision 4/CMP.11.

[b] An asterisk is included next to each issue type for all issues that are also problems, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

[c] The review of the 2015 annual submission is being held in conjunction with the review of the 2016 annual submission. Therefore, the recommendations reflected in table 3 are from the 2014 annual review report.

IV. Issues identified in three successive reviews and not addressed by the Party

9. In accordance with paragraph 83 of the UNFCCC review guidelines, the ERT noted that the issues included in table 4 have been identified in three successive reviews,

including the review of the 2015 annual submission of Romania, and have not been addressed by the Party.

Table 4
Issues identified in three successive reviews and not addressed by Romania

ID[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*[b]
General		
	No such general issues were identified	
Energy		
E.1	Endeavour to facilitate effective access to, and the sharing of, relevant energy data between all relevant actors involved in data collection and processing	3 (2013–2015/2016)
E.2	Provide, in the NIR, proof of the accuracy of the country-specific CO_2 EF for lignite, and an explanation for the reasons for the differences between the country-specific CO_2 EF for lignite, the IPCC default value and the values used by other reporting Parties	3 (2013–2015/2016)
E.5	Harmonize the values reported in CRF tables 1.C and 1.A(b) for jet kerosene	4 (2012–2015/2016)
E.8	Report in the NIR the fuel mix information for the category public electricity and heat production where the IEF varies notably over the years, owing to the variation in the fuel mix	3 (2013–2015/2016)
E.12	Justify the applicability of the EU ETS CO_2 EF for diesel used in road transportation or estimate the emissions by using data on CO_2 EFs from fuel producers and/or fuel importers and NCVs from either fuel producers and/or importers, or from the energy balance	3 (2013–2015/2016)
IPPU		
	No such issues for the IPPU sector were identified	
Agriculture		
A.6*	Use annual milk data to estimate the CH_4 EFs for dairy cows for enteric fermentation	3 (2013–2015/2016)
A.7*	Estimate milk production per animal per day using the milk production data provided by the National Institute for Statistics and the number of dairy cattle	3 (2013–2015/2016)
LULUCF		
L.5*	Provide estimates for the dead organic matter and mineral soil pools using the tier 2 methodology	4 (2012–2015/2016)
L.9*	Estimate and report the carbon stock changes in mineral and organic soils	4 (2012–2015/2016)
L.10	Use the notation key "NE" instead of "NO" for the pools for	4 (2012–2015/2016)

ID#[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*[b]
	which a tier 1 method is used, assuming no change in carbon stock	
Waste		
W.1*	Make efforts to develop country-specific EFs and parameters for the estimation of emissions from this category	3 (2013–2015/2016)
KP-LULUCF		
	No such issues for KP-LULUCF activities were identified	

Abbreviations: CRF = common reporting format, EF = emission factor, EU ETS = European Union Emissions Trading System, IEF = implied emission factor, IPCC = Intergovernmental Panel on Climate Change, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NCV = net calorific value, NE = not estimated, NIR = national inventory report, NO = not occurring.

[a] An asterisk is included after any issue ID# where the underlying issue is related to accuracy or completeness of a key category, a missing category or a potential key category, as indicated in decision 13/CP.20, annex, paragraph 83.

[b] The review of the 2015 annual submission is being held in conjunction with the review of the 2016 annual submission. As the reviews of the 2015 and 2016 annual submissions are not "successive" reviews, but are rather being held in conjunction, for the purpose of counting successive years in table 4, 2015/2016 is considered as one year. The ERT noted that this table 4 is the same as that in the 2016 annual review report for Romania, modified to reflect the combined 2015/2016 review.

V. Additional findings made during the 2015 technical review

10. Table 5 contains findings made by the ERT during the technical review of the 2015 annual submission of Romania that are additional to those identified in table 3 above.

Table 5
Additional findings made during the 2015 technical review of the annual submission of Romania[a]

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue*[b] *and or a problem*[c]*? If yes, classify by type*
General			
G.4	Transparency	Romania has made improvements to its NIR; however, a number of issues remain: (1) there is still some repetitive text – for example, the road transportation methodology is provided three times in the NIR; and (2) some of the text is out of date – for example, in the sections on trends and the LULUCF sector (e.g. ID# L.14, L.15 below)	Yes. Transparency•
		The ERT recommends that the Party review the NIR for redundant, repetitive and duplicative information, and improve transparency in the areas identified by the ERT	
G.5	National system	The information provided in the NIR on changes to the national system since the last submission does not distinguish between changes made since the previous submission and before the previous submission	Yes. Transparency•
		The ERT recommends that the Party make a clear distinction in the NIR between changes made to the national system since and prior to the previous submission	
G.6	National system	No improvements have been made to the QA/QC plan or the process for continual improvement since the last submission	Not an issue
		The ERT encourages the Party to update these aspects	
G.7	Transparency	During the review, the ERT raised a question as to how the Party ensures that data providers undertake QC checks; a response was received from the Party explaining that the competent authority and the data providers have obligations and responsibilities in the preparation of a GHG inventory, as set out in the Governmental Decision no. 1570/2007, including undertaking appropriate QC on data	Not an issue
		The ERT encourages the Party to provide information in its NIR on the QC checks undertaken by data providers	
G.8	CRF	The ERT noted that CRF table 9 was not complete. During the review, the ERT raised a question as to the completeness of CRF table 9 (use of notation keys); an update was provided by the Party during the review	Yes. Transparency•
		The ERT recommends that the Party provide a full list of notation keys used and the reasons for using them in CRF table 9	

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and or a problem[c]? If yes, classify by type
G.9	Further improvements (identified by the Party)	The NIR (table 10.4) does not indicate the timescales for the planned inventory improvements. During the review, the Party provided this information to the ERT The ERT encourages the Party to include information in the NIR on timescales for implementing planned inventory improvements	Not an issue
G.10	National system	Romania reported information on how the national system under Article 5, paragraph 1, of the Kyoto Protocol will identify land areas associated with all additional elected activities and how the Party ensures that land that was accounted for in the first commitment period continues to be accounted for in the second commitment period	Not an issue
G.11	National registry	The ERT noted that a thorough review of the national registry, as stipulated by the "Guidelines for review under Article 8 of the Kyoto Protocol", part V, "Review of national registries", has been undertaken in the context of the initialization of the national registry of Romania by the administrator of the international transaction log. Romania reported no changes to the database structure as it pertains to the functionality of the registry in relation to the Kyoto Protocol in 2015. The versions of the Consolidated System of European Union Registries released after version 6.3.3.2 ensured the functionality of the registry in relation to the EU ETS. Romania explained that site acceptance tests, both regression tests and tests on the new functionality, were successfully carried out prior to the release of the version to production. The SIAR concluded that the Party's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions	Not an issue
G.12	National registry	Romania reported in the NIR a change to the name or contact information of the registry administrator, but this change has not been updated on the national registry website The ERT reiterates the recommendations made in the SIAR that Romania designate a person as national registry administrator and publish his/her name and contact information on the national registry website, and that Romania include information on the representative identifier for all accounts in accordance with decision 13/CMP.1, annex, paragraph 45(d), and information on current holdings of ERUs, CERs, AAUs and RMUs in each account in accordance with decision 13/CMP.1, annex, paragraph 47(l), or clearly state that this information is confidential	Yes. Transparency*
G.13	Kyoto Protocol units	The technical assessment of the national registry, including the results of standardized testing, indicates that the information on Kyoto Protocol units has been reported accurately in the required SEF tables in accordance with section I.E of the annex to decision 15/CMP.1 and the annex to decision 14/CMP.1	Not an issue

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and or a problem[c]? If yes, classify by type
		The SIAR assessment notes that Romania's national registry continues to fulfil the requirements related to its reporting and accounting of information on Kyoto Protocol units, transaction procedures and conformance with technical standards, security, data integrity and recovery measures. Romania has reported information on its accounting of Kyoto Protocol units in the required SEF tables, consistent with decisions 15/CMP.1 and 14/CMP.1	
		The ERT concluded that the Party's records on its accounting of Kyoto Protocol units contained in its national registry are consistent with the corresponding records of the international transaction log	
Energy			
E.14	Fuel combustion – reference approach – solid and other fuels – CO_2	The CO_2 EFs for coke oven/gas coke and industrial waste reported in CRF table 1.A(b) are lower than the lower end of the 95% confidence interval of the default EFs listed in table 1.3 of the 2006 IPCC Guidelines (volume 2). During the review, Romania explained that the EFs were determined based on the EU ETS operators' reports and provided detailed data, including on the composition of industrial waste	Yes. Transparency*
		The ERT recommends that Romania provide an explanation in the NIR for the reasons why the CO_2 EFs for coke oven/gas coke and industrial waste are significantly lower than the IPCC default values, without disclosing confidential data	
E.15	Feedstocks, reductants and other non-energy use of fuels – gas and liquid fuels – CO_2	The ERT observed some differences between the "carbon stored" in CRF table 1.A(b) and the "carbon excluded" in CRF table 1.A(d) for bitumen for 1991, natural gas for 2014 and paraffin wax for 2013 and 2014. During the review, Romania explained that incorrect values were reported in CRF table 1.A(b) for natural gas and paraffin wax and in CRF table 1.A(d) for bitumen	Yes. Transparency*
		The ERT recommends that Romania harmonize the data on "carbon stored" in CRF table 1.A(b) and "carbon excluded" in CRF table 1.A(d) for bitumen, natural gas and paraffin wax for the entire time series	
E.16	1.A. Fuel combustion – sectoral approach – liquid and solid fuels – CO_2	Romania used country-specific CO_2 EFs that were determined based on the reports of EU ETS operators to estimate CO_2 emissions from fuel combustion for liquid and solid fuels. NIR table 3.7 lists the two types of EF used: including the OF; and excluding the OF. The ERT identified that the values of the EFs, including the OF, are higher than the values of the EFs excluding the OF for the following fuels: refinery gas; other bituminous coal; transport diesel; heating and other gasoil; and petroleum coke. In general, the OFs are equal to or less than one; thus, the EFs, including the OF, should be equal to or smaller than the EFs excluding the OF. During the review, Romania explained that the OFs and the EFs excluding the OF were determined by using an average weighted by fuel consumption. Romania also explained that the EFs, including the OF, were obtained by dividing the	Yes. Accuracy*

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and or a problem[c]? If yes, classify by type
		sum of the reported CO_2 emissions by the fuel consumption. Romania further explained that the OFs do not exceed a value of one for each operator's report. The ERT considers that it is still unclear under which conditions the values of the EFs, including the OF, are higher than the values of the EFs excluding the OF. In addition, Romania used the EFs, including the OF, for the sectoral approach, and used the EFs excluding the OF and the default OF (equal to one) for the reference approach. The ERT notes that this difference in the OF might increase the discrepancy between both approaches The ERT recommends that Romania explain in the NIR under which conditions the values of the EFs, including the OF, are higher than the values of the EFs excluding the OF	
E.17	1.A.3.b Road transportation – liquid and gaseous fuels – N_2O	N_2O emissions from road transportation increased between 2005 (0.41 kt N_2O) and 2014 (0.55 kt N_2O) according to CRF table 1.A(a); however, according to NIR figure 2.41, those emissions decreased during the same period (from about 3 kt N_2O to about 2 kt N_2O) The ERT recommends that Romania check the time-series consistency of the emission estimates for N_2O emissions from liquid and gaseous fuels and report the correct emission estimates in both the CRF tables and the NIR	Yes. Consistency*
E.18	1.A.3.b Road transportation – liquid and gaseous fuels – N_2O	N_2O emissions from road transportation decreased significantly (by –43%) between 2004 (0.72 kt N_2O) and 2005 (0.41 kt N_2O) according to the CRF tables. The ERT also observed a decrease (by –14%) in the total number of vehicles between 2004 (4.33 million vehicles) and 2005 (3.72 million vehicles), according to the information provided in annex 4.2 to the NIR: this difference coincides with the methodological change from a tier 1 to tier 3 approach. During the review, Romania explained that the data on the number of vehicles were obtained from the National Institute for Statistics until 2004 and from the Romanian Automobile Registry since 2005. Romania also explained that the Romanian Automobile Registry does not have the relevant data for years prior to 2004. The data since 2005 have been obtained from the Romanian Automobile Registry's vehicle registration database (vehicle registration is a legal requirement) The ERT recommends that Romania investigate how the data on the number of vehicles up to 2004 (provided by the National Institute for Statistics) are obtained (e.g. via a complete survey; as an estimate using a sample survey; or using a model), with a view to ensuring a consistent time series for the number of vehicles	Yes. Consistency*
E.19	1.B.1.a Coal mining and handling – CH_4	Romania reported CH_4 emissions from abandoned underground mines, but provided limited information on the AD and assumptions in the NIR. During the review, Romania provided calculation files that included an explanation of the assumptions used The ERT recommends that Romania include information on AD and assumptions to estimate CH_4	Yes. Transparency*

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		emissions from abandoned underground mines in the NIR	
E.20	1.B.1.a Coal mining and handling – CH_4	The AD for surface mines for the period 1989–1999 are assumed to amount to 85% of total lignite production for that period. The percentage was obtained from a study conducted by the National Institute for Statistics and the Institute for Studies and Power Engineering, based on expert judgement. For 2000 onwards, the AD were obtained directly from the data reported to Eurostat. According to the data reported to Eurostat (annex 4.3 to the NIR), 74% of total lignite production was from surface mines in 2000	Yes. Transparency*
		The ERT recommends that Romania improve the transparency of the information provided on how the AD for coal mining for surface mines are derived	
E.21	1.B.1.a Coal mining and handling – CH_4	The AD for surface mines for the period 1989–1999 are assumed to amount to 85% of total lignite production for that period. The percentage was obtained from a study conducted by the National Institute for Statistics and the Institute for Studies and Power Engineering, based on expert judgement. For 2000 onwards, the AD were obtained directly from the data reported to Eurostat. According to the data reported to Eurostat (annex 4.3 to the NIR), 74% of total lignite production was from surface mines in 2000	Yes. Consistency*
		The ERT recommends that Romania confirm the validity of the ratio used to derive the surface mine production data to ensure time-series consistency, and, if appropriate, revise the time series subject to the outcome of this assessment	
E.22	1.B.2 Oil and natural gas and other – CO_2, CH_4 and N_2O	Density values are an important parameter in order to derive the AD for categories 1.B.2.a (oil), 1.B.2.c.i (venting – oil) and 1.B.2.c.i (flaring – oil). However, this parameter was not provided in the NIR. During the review, Romania provided these data for each fuel with supporting reference documents. The ERT noted that, owing to a lack of data, the density values for crude oil and liquefied natural gas were used as a proxy for bitumen and natural gas liquids, respectively. The ERT believes that this issue should be considered further in future reviews to confirm there is not an underestimate of emissions	Yes. Transparency*
		The ERT recommends that Romania include additional information on density values for each fuel, including the explanations for the use of proxies, in the NIR. The ERT encourages Romania to conduct a literature survey to confirm the current proxies used for bitumen and natural gas liquids, with a view to reflecting the actual physical properties	
E.23	1.B.2.a Oil – CO_2 and CH_4	Romania used different AD for categories 1.B.2.a.iii.1 (oil – exploration) and 1.B.2.a.iii.2 (oil – production). Romania included fuel oil and bitumen produced from oil refineries in the AD for oil – production. During the review, Romania explained that, according to the 2006 IPCC Guidelines	Yes. Transparency*

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and or a problem[c]? If yes, classify by type
		(volume 2, table 4.2.1), oil upgraders may be integrated with oil refineries. Romania also stated that it would investigate this issue further The ERT recommends that Romania provide information in the NIR explaining why the current choice of AD for category 1.B.2.a.2 are appropriate to the national circumstances	
E.24	1.B.2.a Oil – CO_2 and CH_4	Romania estimated the CO_2 emissions from petroleum coke deposited on catalysts during oil refining processes. The Party used a country-specific EF, but limited information on the EF is presented in section 3.3.2.2.1 of the NIR. During the review, Romania stated that the EF is determined based on the reports of EU ETS operators and should be the same as those provided in annex 3.1 to the NIR. During the review, Romania recognized that there were some errors in the reported information for this category The ERT recommends that Romania clearly describe the source of the EFs for catalyst coke in section 3.3.2.2.1 of the NIR and conduct any necessary corrections to the values of the EFs	Yes. Transparency*
E.25	1.B.2.b Natural gas – CO_2 and CH_4	Table 4.2.5 of the 2006 IPCC Guidelines provides the default EFs not only for "transmission" and "fugitives" but also for "storage" and "all" emissions. The IEFs for category 1.B.2.b.iii.4 (other – transmission and storage) are consistent with the mid-range of the IPCC default EFs for "transmission" and "fugitives". The ERT could not identify whether the emissions from gas storage were included in the estimate. During the review, Romania stated that it would investigate this issue. The ERT believes that this issue should be considered further in future reviews to confirm there is not an underestimate of emissions The ERT recommends that Romania justify whether the fugitive emissions from gas storage occur or report the emissions under category 1.B.2.b.iii.4 (other – transmission and storage)	Yes. Completeness*
E.26	1.B.2.b Natural gas – CO_2 and CH_4	The ERT identified from the CRF tables that Romania assumed that its emissions from category 1.B.2.b.3 (natural gas – processing) were included under category 1.B.2.b.2 (natural gas – production) (the emissions were reported using the notation key "IE"). The IEFs for category 1.B.2.b.2 (natural gas – production) were 97.00 kg/106 m^3 for CO_2 and 12,190.00 kg/106 m^3 for CH_4. The IEFs corresponded to the mid-range of the IPCC default values for "gas production" and "fugitives" provided in table 4.2.5 of the 2006 IPCC Guidelines (volume 2). The 2006 IPCC Guidelines provide default values for "gas processing", "default weighted total" and "fugitives" (1.5E-04 to 3.5E-04 Gg/106 m^3 for CH_4 and 1.2E-05 to 2.8E-05 Gg/106 m^3 for CO_2) During the review, Romania explained that the AD are for "natural gas – indigenous production", which were obtained from the IEA Eurostat questionnaire 2014, in which it is specified that gas production includes the quantities consumed within the natural gas industry, in gas extraction,	Yes. Transparency*

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and or a problem[c]? If yes, classify by type
		pipeline systems and processing plants The ERT concluded that Romania had applied a default EF for gas production from the 2006 IPCC Guidelines to total production and that the default EF did not include additional emissions that occur from gas processing. Therefore, the ERT concluded that Romania had not estimated emissions for the full time series for gas processing and that this represented a lack of completeness, and included this in the list of potential problems and further questions raised by the ERT In response to this list, Romania submitted revised estimates for the full time series for category 1.B.2.b.iii using the amount of indigenous production as AD and the middle of the range of the IPCC default values as the EF in order to avoid a possible underestimation of emissions. The ERT agreed with the revised estimate submitted by Romania The ERT recommends that Romania describe the recalculation for gas production and gas processing in the NIR	
E.27	1.B.2.c Venting and flaring – CO_2 and CH_4	During the review, Romania confirmed an ERT observation that the CO_2 EF for category 1.B.2.c.ii (venting – gas) reported in the NIR was an error and that the EF used in the estimations was from the 2006 IPCC Guidelines. The ERT recommends that Romania correctly report the CO_2 EF for category 1.B.2.c.ii (venting – gas) in the NIR	Yes. Transparency•
E.28	1.B.2.d Other (oil, natural gas and other emissions from energy production) – CH_4	Romania reported the emissions from leakage at industrial plants and power stations under category 1.B.2.d (other) instead of under category 1.B.2.b.iii.6 (natural gas – other (other leakage)). During the review, Romania explained that the CRF Reporter did not allow the creation of a new node under category 1.B.2.b.iii.6 As these emissions are related to natural gas, the ERT recommends that Romania report the sum of "leakage at industrial plants and power stations" and "leakage in residential and commercial sectors" under category 1.B.2.b.iii.6 (natural gas – other (other leakage)) for the AD and emissions	Yes. Comparability•
IPPU			
I.7	2.A.4 Other process uses of carbonates – CO_2	Romania included in its NIR a comparison of the CO_2 emission estimates from category 2.A.4 (other process uses of carbonates) between the EU ETS data and its GHG inventory data (see annex 6.5 to the NIR). The ERT noted that the emissions reported in the GHG inventory are lower by approximately 11% for 2014 (reported as 212.35 Gg CO_2, whereas the corresponding EU ETS emission data are 235.80 Gg CO_2). The difference in emissions was attributed to the use of different methodologies. During the review, Romania highlighted that its GHG emission estimates are based	Yes. Transparency•

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and or a problem[c]? If yes, classify by type
		on data collected separately for processes including pulp and paper production, ceramics plants and flue gas desulphurization plants, and that the data for soda ash use include pulp and paper production, chemicals producers, flue gas desulphurization, water treatment, and soap and detergent production. During the review, Romania also acknowledged that some of the operators included in the ceramics installations category that are operating under the EU ETS have not declared limestone and dolomite consumption in their data collected for the GHG inventory emission estimates. The ERT identified that this was a potential underestimation of CO_2 emissions and included this in the list of potential problems and further questions raised by the ERT In response to the list of potential problems and further questions raised by the ERT, Romania submitted revised estimates for the full time series for category 2.A.4 (other process uses of carbonates) by gathering appropriate data for all plants and processes using carbonates not included elsewhere in the GHG inventory. The ERT agreed with the revised estimate submitted by Romania The ERT recommends that Romania describe the recalculation of CO_2 emission estimates from category 2.A.4 (other process uses of carbonates) in the NIR	
I.8	2.B Chemical industry – CO_2	The ERT noted that Romania reported the notation key "IE" for CO_2 emissions from silicon carbide production (category 2.B.5.a) and titanium dioxide production (category 2.B.6) without specifying where the emissions for each category are reported. During the review, Romania provided information explaining that the emission estimates for silicon carbide production are included under other non-specified – solid fuels (category 1.A.2.f), while the emission estimates for titanium dioxide are included under iron and steel – liquid fuels (category 1.A.2.a) The ERT recommends that the Party report CO_2 emissions from silicon carbide production (category 2.B.5.a) and titanium dioxide production (category 2.B.6) in the appropriate category or report them using the notation key "IE" and include information on the allocation of CO_2 emissions from silicon carbide production (category 2.B.5.a) and titanium dioxide production (category 2.B.6) in the NIR	Yes. Transparency*
I.9	2.B.1 Ammonia production – CO_2	Romania subtracted the CO_2 emissions that occur from urea use as fertilizer from ammonia production. The ERT could not evaluate the method used by the Party because no data on import, export or production of urea were provided in the NIR. During the review, Romania explained that import/export data are not known and that data on the production and use of urea were used for the whole time series instead. It follows that production of urea is much higher than use of urea as fertilizer; therefore, the method used by the Party of subtracting only the emissions from urea fertilizer ensures a conservative emission estimate. The ERT agrees that this approach overestimate actual emissions but notes that the estimates are not accurate The ERT recommends that Romania review the CO_2 emissions from ammonia production by	Yes. Accuracy*

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		considering imports, exports and production of urea	
I.10	2.B.1 Ammonia production – CO_2	Romania divided the amount of natural gas used for ammonia production between ammonia production (category 2.B.1) under the IPPU sector and chemicals (category 1.A.2.c) under the energy sector. The ERT noted this is not in accordance with the 2006 IPCC Guidelines which state that there is no distinction between fuel and feedstock emissions and that all emissions should be accounted for under the IPPU sector	Yes. Comparability*
		The ERT recommends that Romania report all emissions from natural gas in ammonia production under the IPPU sector	
I.11	2.B.2 Nitric acid production – N_2O	The ERT noted that nitric acid plants in Romania use abatement technologies for N_2O emissions but the NIR does not provide any data on the efficiency and/or destruction factor. During the review, Romania explained that the efficiency of the abatement systems is in the range of 80–87.77%, and provided data on the abatements systems	Yes. Transparency*
		The ERT recommends that Romania include information on the efficiency of the abatement systems for N_2O emissions in the NIR	
I.12	2.B.5 Carbide production – CO_2 and CH_4	The ERT identified that Romania reported the notation key "NE" for CO_2 and CH_4 emissions from category 2.B.5.A (silicon carbide) for the years 1989–2002. During the review, Romania explained that this activity did not occur during that period	Yes. Transparency*
		The ERT recommends that Romania use the correct notation key of "NO" to report silicon carbide for the years 1989–2002	
I.13	2.B.5 Carbide production – CO_2	The ERT noted that Romania reported a CO_2 IEF that was much higher than the IPCC default value, particularly for the base year. During the review, Romania stated that the higher IEF is a result of higher production of calcium carbide. The ERT also noted that this explanation contradicts common knowledge that when the production of calcium carbide is higher, lower imports are needed, and the IEF should therefore be closer to the IPCC default value. During the review, Romania provided confidential data on production, import and export of calcium carbide for the whole time series. The ERT identified that Romania used the amount of calcium carbide used as the AD in the estimation of emissions, while in the CRF tables and in the NIR Romania reported the production of calcium carbide as the AD	Yes. Transparency*
		The ERT recommends that Romania use the production of calcium carbide as the AD both in the CRF tables and in the NIR	
I.14	2.G.3 N_2O from	The ERT noted that Romania did not report N_2O emission estimates for product use – food industry	Yes. Completeness*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and or a problem[c]? If yes, classify by type*
	product uses – N_2O	(reported using the notation key "NO"). Romania provided information explaining that it had made efforts to identify the possible sources of N_2O emissions. The obtained information led the Party to use the notation key "NO" to report N_2O emissions from aerosol cans. The ERT agrees with the information provided by the Party The ERT recommends that Romania continue its efforts to identify a source of data to allow for the estimation of emissions for this category	
Agriculture			
A.12	3. General (agriculture) – CH_4, N_2O and CO_2	The ERT noted inconsistencies in the NIR and in the CRF tables (see ID#s A.14, 15, 16, 19 below) The ERT encourages Romania to improve its QA/QC procedures to ensure the consistency and accuracy of the reported information	Not an issue
A.13	3. General (agriculture) – CH_4 and N_2O	Romania reported the contribution of CH_4 and N_2O emissions from the agriculture sector over the time series in table 5.2 of the NIR. The ERT noted that the sum of the contribution of CH_4 and N_2O emissions is greater than 100% without even accounting for CO_2 emissions from urea and lime application. The contribution of the agriculture sector to the national total GHG emissions reported in the same table was also incorrect. During the review, Romania acknowledged these errors and agreed to correct them in the next inventory submission The ERT recommends that Romania accurately report the contribution of CH_4 and N_2O emissions from the agriculture sector as well as the contribution of the agriculture sector to the national total GHG emissions in the NIR	Yes. Transparency*
A.14	3.B Manure management – N_2O	Romania reported animal population data for each livestock category, the manure N excretion rate, the manure N excreted by each AWMS, and direct and indirect N_2O emissions from manure management. The ERT noted that the amount of manure N calculated using the animal population data multiplied by the N excretion rate was not consistent with the animal population number calculated by totalling all AWMS for the same animal category. During the review, Romania acknowledged that these inconsistencies resulted from the aggregation of several livestock subcategories; each with a specific Nex rate The ERT recommends that Romania correctly report the weighted average of Nex among each livestock subcategory in the CRF tables	Yes. Transparency*
A.15	3.B Manure management –	The 2006 IPCC Guidelines provide default N_2O EFs and parameters for a number of livestock categories including rabbits, turkeys and ducks. The ERT noted that the FAOSTAT database contains population data for these livestock categories for Romania. During the review, Romania	Yes. Completeness*

ID[a]	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
	N_2O	explained that further analysis is required regarding the inclusion or exclusion of emissions from rabbits, turkeys and ducks. The ERT believes that this issue should be considered further in future reviews to confirm there is not an underestimate of emissions The ERT welcomes the Party's efforts and recommends that Romania provide either N_2O emission estimates for rabbits, turkeys and ducks or justification for their exclusion, along with all required documentation	
A.16	3.B Manure management – N_2O	In table 5.10 of the NIR, Romania reported manure management systems for each livestock category. However, fewer manure management systems were reported for each livestock category in CRF table 3.B(b). For instance, liquid systems, solid storage and dry lot, and pasture, range and paddock were used for dairy cattle in CRF table 3.B(b), whereas anaerobic lagoon, daily spread, pit storage, poultry manure with bedding, and poultry manure without bedding, were also reported for the same livestock category (table 5.10 of the NIR). During the review, Romania acknowledged inconsistencies in the AWMS reported in the CRF tables and in the NIR The ERT recommends that Romania correctly report the AWMS for each livestock category in CRF table 3.B.(a) and the NIR	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines
A.17	3.B.4 Other livestock – N_2O	The ERT noted that in CRF table 3.B(a), Romania reported animal manure management systems for buffalo as 40% with solid storage and dry lot, and 6% with pasture, range and paddock. During the review, Romania acknowledged a transcription error; the correct percentage should be 60% with pasture, range and paddock The ERT recommends that Romania correct this error	Yes. Transparency[e]
A.18	3.B.5 Indirect N_2O emissions – N_2O	The ERT noted that Romania reported indirect N_2O emissions from N leaching and run-off from manure management systems using the notation key "NO" in CRF table 3.B(b), and provided no explanations in the NIR to justify its decision. The ERT also noted that Romania has reported indirect N_2O emissions from N leaching and run-off in CRF table 3.D and describes the source of N for these emissions as N from fertilizers and other agricultural inputs. The 2006 IPCC Guidelines provide the default method for estimating N loss due to leaching and run-off from manure management systems (equation 10.28), and indirect N_2O emissions (equation 10.29). During the review, Romania acknowledged this issue, and agreed to provide either emission estimates or justification through the "threshold of significance" rule under decision 24/CP.19, annex I, paragraph 37(b). The ERT believes that this issue should be considered further in future reviews to confirm there is not an underestimate of emissions The ERT recommends that Romania provide either justification for reporting using the notation key	Yes. Completeness[e]

ID[1]	Finding classification	Description of the finding with recommendation or encouraging word	Is finding an issue[2] and/or a problem[3]? If yes, classify by type
		"NO" or estimates for indirect N_2O emissions from manure management systems due to N leaching and run-off from manure management systems	
A.19	3.D Direct and indirect N_2O emissions from agricultural soils – N_2O	The ERT noted that in the additional information sheet of CRF table 3.D, Romania reported $Frac_{LEACH}$ using the notation key "NO", the ratio of below-ground residues to yield for all crops as 0.98, and the ratio of above-ground residue dry matter to harvested yield for all crops as 0.0000005722. During the review, Romania explained that the ratio of below-ground residues to yield for all crops (0.98) is correct, that the reporting of the notation key "NO" for $Frac_{LEACH}$ is not correct, and that the reporting of above-ground residue dry matter to harvested yield for all crops was calculated from equation 11.6 in volume 4 of the 2006 IPCC Guidelines (page 11.14)	Yes. Transparency*
		The ERT recommends that Romania report the correct fractions of $Frac_{LEACH}$ in the CRF, and to report in the NIR enhanced information regarding the calculation of the ratio of above-ground residue dry matter to harvested yield for all crops	
A.20	3.F Field burning of agricultural residues – CH_4 and N_2O	In the NIR, Romania stated that CH_4 and N_2O emissions from field burning of agricultural residues were estimated following the tier 1 method provided in the 2006 IPCC Guidelines using the default EFs (page 600 of the NIR). In CRF table 3.F, Romania reported the AD, parameters and emission estimates by crop type. However, the IEFs provided in this table deviate significantly from the IPCC default values. During the review, Romania acknowledged this matter and confirmed that it had used the tier 1 method, including default EFs, to estimate these emissions	Yes. Comparability*
		The ERT recommends that Romania correct the problem so that the IEFs reflect the actual inventory method used for estimating CH_4 and N_2O emissions from field burning of crop residues	
A.21	3.H Urea application – CO_2	The ERT noted that Romania reported CO_2 emissions from urea application using the amount of synthetic N multiplied by the proportion of N in urea (11.06 per cent) along with an EF of 0.2, which is urea-based, not urea-N-based, and therefore the estimates of the CO_2 emissions from urea calculated by Romania are lower by a factor of 1/0.46 (2.17) annually. During the review, Romania acknowledged this anomaly. The ERT believes that this issue should be considered further in future reviews to confirm there is not an underestimate of emissions	Yes. Accuracy*
		The ERT recommends that Romania report the correct amounts of CO_2 emissions from urea application by revising the formula used for the calculation of emissions	
LULUCF			
L.12	4. General (LULUCF) –	The Party presented information in the NIR on the classification of forests following tree species. The information was not transparent and an issue regarding potential double counting was identified	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		arising from an interpretation of land-use definitions provided in chapter 6.2 of the NIR. During the review, Romania clarified the issue regarding double counting and advised that it will improve the description of the land-use definitions	
		The ERT recommends that the Party improve the description and transparency of the land-use definitions reported in the NIR	
L.13	4. General (LULUCF) –	According to the 2006 IPCC Guidelines, it is good practice that whenever a LULUCF category is identified as a key category the associated activity under the Kyoto Protocol is also treated as a key category (chapter 2.3.6). The ERT noted that land converted to settlements and land converted to other land were identified as key categories, but the Party did not document why deforestation associated with these conversions is not considered a key category. The Party acknowledged this inconsistency and resolved to address it in the next submission	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines
		The ERT recommends that the Party ensure the consistency of the key categories between the LULUCF sector and KP-LULUCF activities	
L.14	Land representation – all gases	The Party implemented a new land representation system in 2015. The ERT noted large fluctuations in land areas for different categories between the 2014, 2015 and the 2016 NIRs (total cropland area at the end of 2012 is: based on CRF table 5.A (submission 2014) 9,799.44kHa, CRF table 4.A (submission 2015) 5,534.31kha and CRF table 4.A (submission 2016) 8760.50kha). Further, the new methodology was not explained transparently and completely. The Party acknowledged the current lack of documentation in English and the fluctuations in the time series, which can be expected owing to the early stage of deployment of the new system	Not an issue
		The ERT commends the Party for its efforts to improve the land representation system and encourages the Party to monitor the accuracy of and fluctuation in land areas until the new system is fully operational	
L.15	Land representation – all gases	Inconsistencies were identified for the land-use matrices reported in the main text of the NIR (in table 6.5 and annex 6.7) and the associated CRF tables. During the review, Romania explained that the NIR and its annexes had not been updated to reflect the new land representation system that was developed in 2015, and, further, that the data for the latest years should be considered as preliminary only, as currently only data for 1980 and 2005 have been finalized for use with the new land representation system	Yes. Transparency*
		The ERT recommends that the Party improve the transparency and consistency of the land-use matrices between the NIR and the CRF tables independently of the implementation of the new methodology	

ID[a]	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and or a problem[c]? If yes, classify by type*
L.16	4.A Forest land – CO_2	The Party used a carbon fraction from the 2006 IPCC Guidelines (volume 4, table 4.3) that is applicable to all trees, even though the Party has information on the volume of both conifers and broadleaves. During the review, Romania explained why it is not using the species-specific values provided in the 2006 IPCC Guidelines and provided convincing justification for not doing so. The Party explained that the use of the species-specific values may have negligible impact on the actual carbon stock change estimate, but Romania further assured the ERT that this matter will be reviewed for the next submission when further NFI data are available	Yes. Transparency*
		The ERT recommends that the Party analyse the effect of not using species-specific carbon fractions for the estimates of emissions and removals with a view to ensure that the estimates are accurate	
L.17	4.A.1 Forest land remaining forest land – CO_2	In the NIR, Romania explained that it applied a tier 2 approach for estimating emissions and removals under forest land remaining forest land consistent with the key category requirements. The ERT noted that the approach followed by the Party is not consistent with a tier 2 approach, as tier 1 assumptions were applied regarding below-ground biomass as a consequence of using a root/shoot ratio of "0". During the review, Romania explained that the information on the root/shoot ratio was incorrect and that a country-specific root/shoot ratio has been used and that this value is the same as reported in the NIR of the 2014 submission	Yes. Transparency*
		The ERT recommends that the Party transparently present the root/shoot ratio used, consistent with the 2006 IPCC Guidelines with regard to key categories and tier methods	
L.18	4.G Harvested wood products – CO_2	The Party reported different values for harvested volume in the NIR and the CRF tables, which were also inconsistent with the FAO data that the Party reported as the primary source. During the review, Romania acknowledged this inconsistency and attributed it to the fact that the NIR table had not been updated	Yes. Transparency*
		The ERT recommends that the Party ensure the consistency and accuracy of the reported harvested volume values between the NIR and the CRF tables	
Waste			
		No issues for the waste sector were identified	
KP-LULUCF			
KL.1	General (KP-LULUCF) – CO_2	The Party reported inconsistent information on how emissions associated with salvage logging are accounted for with regard to the natural disturbance provision. During the review, Romania clarified that the estimated portion of salvage harvest is 10–20% of the standing volume	Yes. Transparency*
		The ERT recommends that the Party improve the transparency and consistency on how emissions	

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and or a problem[c]? If yes, classify by type
		associated with salvage logging are accounted for with regard to the natural disturbance provision between the NIR and the CRF tables	
KL.2	General (KP-LULUCF) – all gases	Romania stated in its initial report to facilitate the calculation of the assigned amount for the second commitment period that it intends to apply the natural disturbance provision and exclude disturbance from wildfires and windfalls. However, Romania did not provide a time series of emissions associated with these two excluded disturbances, and, further, the Party provided inconsistent information in its initial report and in its NIR on the baseline and margin. During the review, Romania provided a time series of the excluded disturbances. Based on these data, it was discovered that the supposedly correct values for the baseline and margin presented in the NIR were based on an inconsistent time series. Romania performed a recalculation, which produced slightly different values for the baseline and margin, which the Party confirmed would be included in its next NIR submission	Yes. Transparency•
		The ERT recommends that the Party improve the transparency and consistency of the reported data on wildfires and windfalls as natural disturbances in its NIR	
KL.3	Forest management – CO_2	The ERT noted that the Party identified the need for a technical correction to the FMRL in the initial report. In addition, the ERT identified the need for a technical correction owing to inconsistencies in the use of data on salvage logging (see ID# KL.1 above). Since the adoption of the FMRL, there have also been substantial changes in the methodologies used for land area representation. On the basis that further new NFI data will become available in the coming years, Romania explained that a technical correction would be applied in the future. However, it is good practice (see chapter 2.7.5.2 of the Kyoto Protocol Supplement) to specify the methodological elements or historical activity used in the reporting of forest management emissions and removals, which are different from those used for calculating the FMRL, as outlined in decision 2/CMP.7, annex, paragraphs 14 and 15	Not a problem
		The ERT underlines the fact that a technical correction is only applicable when a Party uses end of commitment period accounting, but encourages Romania to provide a list, in the next NIR, summarizing any methodological inconsistencies that may trigger a technical correction	
KL.4	Forest management – CO_2	Romania reported that dead wood and litter pools in managed forests included under forest management are not net sources of emissions. The ERT noted that the Party did not sufficiently justify its assumption. During the review, Romania provided convincing evidence supporting the assumption that DOM is not a net source	Yes. Transparency•
		The ERT recommends that Romania include the justification for the assumption that DOM is not a net source in its NIR	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and or a problem[c]? If yes, classify by type*
KL.5	Article 3, paragraph 4, activities	Consistent with chapter 1.2 of the Kyoto Protocol Supplement, Romania established a hierarchy among activities under Article 3, paragraph 3, forest management and elected activities under Article 3, paragraph 4. The ERT noted that the Party established the order not in line with step 1.4 of the Kyoto Protocol Supplement. Namely the Party used "deforestation – afforestation – revegetation - forest management" when it is good practice to use "afforestation – reforestation – deforestation – forest management" – elected Article 3, paragraph 4 activity. Romania acknowledged the inconsistency and confirmed that it would resolve it in the next submission	Yes. Transparency*
		The ERT recommends that the Party correct the hierarchy of KP-LULUCF activities	
KL.6	Revegetation – CO_2, CH_4 and N_2O	Romania did not report base-year (1989) emission estimates for revegetation in CRF table 4(KP-I)B.4. Estimates are reported by Romania for the years 1990 to 2013	Yes. Completeness*
		The ERT recommends that the Party estimate and report CO_2, CH_4 and N_2O emission estimates for revegetation for the base year	
KL.7	Harvested wood products – CO_2	The Party used half-lives of 30 years instead of the default half-lives of 25 years for wood panels and 35 years for sawn wood from decision 2/CMP.7, annex, paragraph 29, and the IPCC, without providing a justification. During the review, Romania explained that the value of 30 years is based on expert judgement, and the Party provided the contact name and affiliation of the expert	Yes. Transparency*
		The ERT recommends that the Party improve the transparency of its description of the half-lives for wood panels and sawn wood, including justification for the expert judgement used, in the NIR	
KL.8	Harvested wood products – CO_2	The Party did not transparently demonstrate how it accounted for emissions and removals from the HWP pool following the requirements set out in annex II to decision 2/CMP.8 and decision 2/CMP.7. During the review, Romania demonstrated that emissions and removals had been accounted for consistently	Yes. Transparency*
		The ERT recommends that the Party improve the transparency of its reporting of the required information	

Abbreviations: AD = activity data, AAU = assigned amount unit, AWMS = animal waste management system, CER = certified emission reduction unit, CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, CRF = common reporting format, EF = emission factor, ERT = expert review team, ERU = emission reduction unit, EU ETS = European Union Emissions Trading System, FAO = Food and Agriculture Organization of the United Nations, FMRL = forest management reference level, $Frac_{LEACH}$ = fraction of nitrogen input to managed soils that is lost through leaching and run-off, GHG = greenhouse gas, HWP = harvested wood products, IE = included elsewhere, IEA = International Energy Agency, IEF = implied emission factor, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, Kyoto Protocol Supplement = *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*, LULUCF = land use, land-use

change and forestry, N = nitrogen, NE = not estimated, Nex = nitrogen excretion, NFI = national forest inventory, NIR = national inventory report, NO = not occurring, OF = oxidation factor, QA/QA = quality assurance/quality control, RMU = removal unit, SEF = standard electronic format, SIAR = standard independent assessment report, 2006 IPCC Guidelines = *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, UNFCCC Annex I inventory reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories",.

[a] The review of the 2015 GHG annual submission is being held in conjunction with the review of the 2016 annual submission, in accordance with decision 10/CMP.11, paragraph 1. The ERT has reviewed both the 2015 and the 2016 inventory submission, and in accordance with the conclusions from the 13th meeting of greenhouse gas inventory lead reviewers (para. 9) has started with the review of the 2016 submission. This table includes all findings that are relevant for both the 2015 and the 2016 annual submission (i.e. this table excludes findings that, although they may have been relevant for the 2015 annual submission, had already been resolved in the 2016 annual submission).

[b] Recommendations are related to issues as defined in decision 13/CP.20, annex, paragraph 81, or problems as identified in decision 22/CMP.1, annex, paragraph 69, identified by the ERT during the review. Encouragements are made to the Party to address all findings not related to such issues.

[c] An asterisk is included next to each issue type that is also a problem, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

VI. Application of adjustments

11. The ERT has not identified the need to apply any adjustments to the 2015 annual submission of Romania.

VII. Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol

12. Romania has elected commitment period accounting and therefore the issuance and cancellation of units for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are not applicable for the 2015 review.

VIII. Questions of implementation

13. No questions of implementation were identified by the ERT during the review.

Annex I

Overview of greenhouse gas emissions and removals for Romania for submission year 2015 and data and information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

1. Tables 6–9 provide an overview of total greenhouse gas emissions and removals, as submitted by Romania.

Table 6

Total greenhouse gas emissions for Romania, base year[a]–2013[b]

(kt CO_2 eq)

	Total GHG emissions excluding indirect CO_2 emissions		*Total GHG emissions including indirect CO_2 emissions[c]*		*Land-use change (Article 3.7 bis as contained in the Doha Amendment)[d]*	*KP-LULUCF activities (Article 3.3 of the Kyoto Protocol)[e]*	*KP-LULUCF activities (Article 3.4 of the Kyoto Protocol)*	
	Total including LULUCF	*Total excluding LULUCF*	*Total including LULUCF*	*Total excluding LULUCF*			*CM, GM, RV, WDR*	*FM*
FMRL								–15 444.00
Base year	288 593.69	304 920.57	288 593.69	304 920.57	NA		NR	
1990	235 616.67	254 999.12	235 616.67	254 999.12				
1995	161 510.70	185 010.51	161 510.70	185 010.51				
2000	119 586.36	142 404.67	119 586.36	142 404.67				
2010	100 628.24	119 124.98	100 628.24	119 124.98				
2011	105 459.59	124 264.62	105 459.59	124 264.62				
2012	104 729.77	122 666.95	104 729.77	122 666.95				
2013	93 701.43	111 933.90	93 701.43	111 933.90		7 723.95	–1 211.36	–27 459.97

Abbreviations: CM = cropland management, FM = forest management, FMRL = forest management reference level, GHG = greenhouse gas, GM = grazing land management, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, NR= not reported, RV = revegetation, WDR = wetland drainage and rewetting.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1989 for CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, and 2000 for NF_3. The base year for revegetation under Article 3, paragraph 4, of the Kyoto Protocol is 1989. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

[c] The Party has not reported indirect CO_2 emissions in common reporting format table 6.

[d] The value reported in this column refers to 1990.

[e] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

Table 7

Greenhouse gas emissions by gas for Romania, excluding land use, land-use change and forestry, 1989–2013[a]

(kt CO_2 eq)

	CO_2[b]	CH_4	N_2O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF_6	NF_3
1989	211 195.74	71 421.42	18 416.02	0.16	3 886.75	NO	0.47	NO
1990	174 731.89	62 314.76	15 496.66	0.18	2 455.17	NO	0.47	NO
1995	128 587.00	43 002.29	11 359.75	2.53	2 057.96	NO	0.98	NO
2000	95 190.90	36 291.13	9 343.81	70.82	1 499.32	NO	8.68	NO
2010	80 795.77	29 750.67	7 526.23	982.46	9.13	NO	60.71	NO
2011	86 163.63	29 103.71	7 844.48	1 092.24	12.72	NO	47.83	NO
2012	84 661.23	29 612.04	7 138.06	1 197.43	7.43	NO	50.76	NO
2013	74 083.36	29 191.88	7 296.71	1 298.59	6.15	NO	57.20	NO
Per cent change 1989–2013	**–64.9**	**–59.1**	**–60.4**	**831 583.5**	**–99.8**	**NA**	**11 943.8**	**NA**

Abbreviations: NA = not applicable, NO = not occurring.

[a] Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

[b] Romania did not report indirect CO_2 emissions in common reporting format table 6.

Table 8
Greenhouse gas emissions by sector for Romania, 1989–2013[a, b]
(kt CO_2 eq)

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
1989	220 276.48	41 297.18	38 211.29	−16 326.88	5 135.62	NR
1990	185 182.37	30 132.53	34 660.86	−19 382.45	5 023.36	NR
1995	133 570.21	23 278.12	23 004.91	−23 499.81	5 157.27	NR
2000	100 862.92	18 268.13	17 910.19	−22 818.31	5 363.42	NR
2010	83 457.17	13 223.81	16 873.15	−18 496.75	5 570.86	NR
2011	88 277.42	13 889.38	17 092.80	−18 805.03	5 005.02	NR
2012	87 062.46	13 101.37	16 997.07	−17 937.19	5 506.05	NR
2013	77 505.36	11 090.71	17 550.23	−18 232.47	5 787.59	NR
Per cent change 1989–2013	**−64.8**	**−73.1**	**−54.1**	**11.7**	**12.7**	**NA**

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NR = not reported.

[a] Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

[b] Romania did not report indirect CO_2 emissions in common reporting format table 6.

Table 9

Greenhouse gas emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by activity, base year[a, b] – 2013, for Romania

(kt CO_2 eq)

	Article 3.7 bis as contained in the Doha Amendment[c]	*Article 3.3 of the Kyoto Protocol*		*Forest management and elected Article 3.4 activities of the Kyoto Protocol*				
	Land-use change	*Afforestation and reforestation*	*Deforestation*	*Forest management*	*Cropland management*	*Grazing land management*	*Revegetation*	*Wetland drainage and rewetting*
FMRL				–15 444.00				
Technical correction				–3 965.25				
Base year	NA				NA	NA	NE	NA
2013		–346.17	8 076.26	–27 479.10	NA	NA	–1 211.36	NA
Per cent change 1989–2013					**NA**	**NA**	**NE**	**NA**

Abbreviations: FMRL = forest management reference level, NA = not applicable, NE = not estimated.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1989 for CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 and 2000 for NF_3. The base year for revegetation under Article 3, paragraph 4, of the Kyoto Protocol is 1989. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Values in this table include emissions on lands subject to natural disturbances, if applicable.

[c] The value reported in this column refers to 1990.

2. Table 10 provides an overview of relevant key data for Romania's reporting under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 10
Key relevant data for Romania under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Key parameters	*Values*
Periodicity of accounting	(a) Afforestation/reforestation: commitment period accounting (b) Deforestation: commitment period accounting (c) Forest management: commitment period accounting (d) Cropland management: not elected (e) Grazing land management: not elected (f) Revegetation: commitment period accounting (g) Wetland drainage and rewetting: not elected
Election of activities under Article 3, paragraph 4	Revegetation
Election of application of provisions for natural disturbances	Yes, for afforestation and reforestation and forest management
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO_2 emissions	10 672.220 kt CO_2 eq (85 377.759 kt CO_2 eq for the duration of the commitment period)
Cancellation of AAUs, ERUs, CERs and/or issuance of RMUs in the national registry for:	
1. Afforestation and reforestation in 2014	NA
2. Deforestation in 2014	NA
3. Forest management in 2014	NA
4. Cropland management in 2014	NA
5. Grazing land management in 2014	NA
6. Revegetation in 2014	NA
7. Wetland drainage and rewetting in 2014	NA

Abbreviations: AAU = assigned amount unit, CER = certified emission reduction unit, ERU = emission reduction unit, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable, RMU = removal unit.

Annex II

Information to be included in the compilation and accounting database

Table 11 includes the information to be included in the compilation and accounting database for Romania. Data shown are from the original annual submission of the Party, including the latest revised estimates submitted, adjustments (if applicable), as well as the final data to be included in the compilation and accounting database.

Table 11
Information to be included in the compilation and accounting database for 2013, for Romania
(t CO_2 eq)

	Original submission	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2013				
CO_2	74 054 078	74 083 358		74 083 358
CH_4	29 124 047	29 191 884		29 191 884
N_2O	7 296 706			7 296 706
HFCs	1 298 595			1 298 595
PFCs	6 149			6 149
Unspecified mix of HFCs and PFCs	NO			NO
SF_6	57 203			57 203
NF_3	NO			NO
Total Annex A sources	**111 836 778**	**103 275 242**		**111 933 896**
Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2013				
3.3 Afforestation and reforestation	−352 308			−352 308
3.3 Deforestation	8 076 258			8 076 258
Forest management and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2013				
3.4 Forest management for 2013	−27 459 967			−27 459 967
3.4 Revegetation for 2013	−1 211 356			−1 211 356
3.4 Revegetation in the base year	NR			NR

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, NO = not occurring, NR = not reported.
[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).
[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

Annex III

Additional information to support findings in table 2

Missing categories that may affect completeness

The categories for which methods are included in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* were reported as "NE" (not estimated) or for which the expert review team otherwise determined that there may be an issue with the completeness of reporting in the Party's inventory are the following:

(a) CO_2 and CH_4 emissions from other – transmission and storage (1.B.2.b) (see ID# E.25 in table 5);

(b) Nitrous oxide (N_2O) emissions from aerosols with regard to aerosol cans (see ID# I.6 in table 3);

(c) CO_2 emissions from other process uses of carbonates (see ID# I.7 in table 5);

(d) N_2O emissions from product use with regard to the food industry (see ID# I.14 in table 5);

(e) N_2O emissions from manure management with regard to rabbits, turkeys and ducks (see ID# A.15 in table 5);

(f) Indirect N_2O emissions from nitrogen leaching and run-off from manure management systems (see ID# A.18 in table 5);

(g) CO_2 emissions from carbon stock changes in dead organic matter in wetlands converted to cropland (see ID# L.4 in table 3);

(h) CO_2 emissions from carbon stock changes in mineral and organic soils for grassland remaining grassland (see ID# L.9 in table 3);

(i) CO_2, CH_4 and N_2O emissions for revegetation in the base year (1989) (see ID# KL.6 in table 5).

Annex IV

Documents and information used during the review

A. Reference documents

Aggregate information on greenhouse gas emissions by sources and removals by sinks for Parties included in Annex I to the Convention. Note by the secretariat. Available at <http://unfccc.int/resource/webdocs/agi/2015.pdf>.

Annual status report for Romania for 2016. Available at <http://unfccc.int/resource/docs/2016/asr/rou.pdf>.

FCCC/ARR/2015/ROU. Report on the individual review of the annual submission of Romania submitted in 2015. Available at <http://unfccc.int/resource/docs/2016/arr/rou.pdf>.

FCCC/ARR/2014/ROU. Report on the individual review of the annual submission of Romania submitted in 2014. Available at <http://unfccc.int/resource/docs/2015/arr/rou.pdf>.

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FCCC/ARR/2012/ROU. Report of the individual review of the annual submission of Romania submitted in 2012. Available at <http://unfccc.int/resource/docs/2013/arr/rou.pdf>.

"Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol". Decision 19/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories". Annex I to decision 24/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=4>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf#page=6>.

"Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part I: implications related to accounting and reporting and other related issues". Decision 3/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=5>.

"Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part II: implications related to review and adjustments and other related issues". Decision 4/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=30>.

Intergovernmental Panel on Climate Change. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

Intergovernmental Panel on Climate Change. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. Available at <http://www.ipcc-nggip.iges.or.jp/public/kpsg>.

Intergovernmental Panel on Climate Change. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. Available at <http://www.ipcc-nggip.iges.or.jp/public/wetlands/index.html>.

Standard independent assessment report, part 1, for Romania for 2015. Available at <http://unfccc.int/files/kyoto_protocol/registry_systems/independent_assessment_reports/application/pdf/siar_2015_rou_1_2.pdf>.

Standard independent assessment report, part 2, for Romania for 2015. Available at <http://unfccc.int/files/kyoto_protocol/registry_systems/independent_assessment_reports/application/pdf/siar_2015_rou_2_2.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Sorin Deaconu (National Environmental Protection Agency), including additional material on the methodology and assumptions used.

Annex V

Acronyms and abbreviations

AAU	assigned amount unit
AD	activity data
Annex A sources	sources included in Annex A to the Kyoto Protocol
AWMS	animal waste management system
CER	certified emission reduction unit
CH_4	methane
CM	cropland management
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CPR	commitment period reserve
CRF	common reporting format
DOC	degradable organic carbon
EF	emission factor
ERT	expert review team
ERU	emission reduction unit
EU ETS	European Union Emissions Trading System
FAO	Food and Agriculture Organization of the United Nations
FM	forest management
FMRL	forest management reference level
$Frac_{LEACH}$	fraction of nitrogen input to managed soils that is lost through leaching and run-off
GHG	greenhouse gas
GM	grazing land management
HFCs	hydrofluorocarbons
HWP	harvested wood products
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
kg	kilogram
KP-LULUCF	LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
kt	kilotonne
LULUCF	land use, land-use change and forestry
m^3	cubic metre
N	nitrogen
N_2O	nitrous oxide
NA	not applicable
NCV	net calorific value
NE	not estimated
Nex	nitrogen excretion
NF_3	nitrogen trifluoride
NFI	national forest inventory
NIR	national inventory report
NO	not occurring
NR	not reported
OF	oxidation factor

PFCs	perfluorocarbons
QA/QC	quality assurance/quality control
RMU	removal unit
RV	revegetation
SEF	standard electronic format
SF_6	sulphur hexafluoride
SIAR	standard independent assessment report
UNFCCC	United Nations Framework Convention on Climate Change
VS	volatile solids
WDR	wetland drainage and rewetting